



# STATE OF NEBRASKA

JAMES L. BROWN, STATE SURVEYOR

## INSTRUCTION 91-1

DATE: January 18, 1991

TO: All County Surveyors

FROM: James L. Brown, State Surveyor

SUBJECT: Riparian Rights and Accretion

NOTICE: This instruction supersedes and replaces an undated instruction from Hugh Dillon, State Surveyor, titled "*Riparian Rights and Accretion*" and Opinion 88-1 of this office dated December 7, 1988. As of this date the Dillon Instruction and Opinion 88-1 are REPEALED.

Pursuant to Nebraska Statutes 23-1907 and 23-1908 this is an instruction to all Nebraska County Surveyors from the State Surveyor. The effective date of this instruction is immediate.

Numerous requests have been received by the Office of the State Surveyor concerning the location of the centerline and the division of accretion along the Platte River. This problem has resulted in Opinions 87-1 and 88-1 being issued as well as uncounted communications on specific problems. This Instruction is being issued in an attempt to clarify surveying methods for County Surveyors in the division of accretions. This instruction assumes that the change in the course of the river is by the slow and imperceptible process of accretion rather than by the rapid and perceptible method of avulsion. If in the process of collecting data the surveyor determines it is probable that avulsion has occurred he or she should be aware that an entirely different method of division of the property is appropriate and the information contained herein does not pertain.

## SECTION 1

### DIVISION BETWEEN ACCRETIONS AND PROPERTY DESCRIBED BY THE RECTANGULAR SYSTEM OR PATENTED LANDS

The accretion or riparian property shall begin at the location of the deepest penetration of the bank of the river into the titled lands counting from the time of the Original Survey by the General Land Office.

The flow in the Platte River has been substantially reduced from the time of the Original Survey by numerous reclamation projects and other uses of the waters which originally were contained in the river. This has caused a general receding of the stream bed of the Platte. The Platte is basically a gentle braided stream which does not normally erode it's banks but rather flows slowly displacing only the sand in it's bed. For these reasons the surveyor will discover that in most cases the meanders of the Original Survey will be the deepest penetration of the river into the patented land and the entire bed of the current river will be contained within these meanders. This is not always the case and the Surveyor should be alert for other information which indicates erosion by the river into previously patented property. The Missouri River has an entirely different personality than the Platte. The Missouri began as a wild river with considerable erosion and avulsion then in later years it has been almost entirely contained by navigation projects of the Corps of Engineers. On this mighty river the original meanders will seldom define the point of deepest penetration into patented land.

The surveyor should use every method at his or her disposal to determine the line of deepest penetration into the patented lands. This could be but is not limited to; old surveys, aerial photographs, eye witness testimony, old maps and county road records. When the surveyor determines that the river has penetrated into patented lands he or she should use all of the information available to accurately reproduce the line of deepest penetration of the bank with a well executed and monument survey line. This line, hereinafter called the ancient bank, will be the starting point for accretion to the patented property.

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## SECTION 2

### OWNERSHIP OF THE BED OF THE STREAM

The decisions of the Court in Nebraska have been quite clear and consistent that the riparian owners own to the center of the stream in all rivers, without regard to navigability, in Nebraska. This conclusion is supported by *Clark v. Cambridge & Arapahoe Irrigation and Improvement Company*<sup>1</sup>, *McBride v. Whitaker*<sup>2</sup>, *Crawford Co.*

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1. *Clark v. Cambridge & Arapahoe Irrigation and Improvement Company*, 45 Neb. 798, 64 N.W. 239 (1895)

2. *McBride v. Whitaker*, 65 Neb. 137, 90 N.W. 966 (1902)

*v. Hathaway*<sup>3</sup>, *Kincaid v. Turgeon*<sup>4</sup> and *Osterman v. Central Nebraska Public Power and Irrigation District*<sup>5</sup>. These cases and others not cited alternately use the terms "centerline of the stream", "thread of the stream", "center of the channel" and "thalweg". The terms "thread of the stream" and "thalweg" both are well defined and are interpreted to mean the deepest channel or last flow to carry water. The other two terms are not as easily defined. The riparian owners rights under reliction would continue as the stream continued to recede until he or she had frontage on the last trickle of water to dry up. For this reason and continued support of the common law of riparian ownership it seems quite clear that the riparian owners claim to the beds of all rivers and streams would continue to the thalweg or thread of the stream and other references to "centerline of the stream" and "center of the channel" were meant to be the same as thalweg or thread of the stream.

Although it might be technically correct to accurately sound the bed of the stream and locate the deepest channel for the limits to the riparian owners claim to the beds of the rivers this method is not practical. The beds of all rivers and particularly braided streams running on a sand or soft bed are subject to continual changes. It is unlikely that the surveyor would be able to return to his or her office before soundings taken of the bed of the Platte River would be obsolete. For this reason the surveyor must use other more reliable and permanent methods to determine the limits to the ownership of the beds of rivers.

For the Missouri River the situation is unique and has a single solution. The flows in this river are entirely controlled by the Corps of Engineers with respect to both quantity and location. The Corps has designed and developed a permanent channel in which they maintain a flow adequate for transportation during the appropriate season. This channel is normally six hundred (600) or six hundred and fifty (650) feet wide depending upon location. The only acceptable method of determining the limits of ownership of the bed of the stream by riparian owners on this river is to determine the exact centerline of the Corps design channel. This method was tacitly approved by the U.S. Supreme Court in the Original Action of *Nebraska v. Iowa*<sup>6</sup> when it was used to determine the state boundaries. To establish this line the Surveyor must obtain copies of the construction plans from the Corps and then use them as follows to obtain the exact centerline.

The Surveyor first must determine from the plans the width of the design channel which normally will be either 600 or 650 feet. The plans will normally show control of channel only on one side by courses along revetments or tips of wing dikes. This control is normally on cords of 500 feet in length. The Surveyor must then run a parallel course on a 300 or 325 foot offset to the center of the river. This will mean that the length of the cords along the centerline will be less than the corresponding bank

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3. *Crawford Co. v. Hathaway*, 67 Neb. 325, 93 N.W. 781 (1903)

4. *Kincaid v. Turgeon*, 74 Neb. 573, 104 N.W. 1061 (1905)

5. *Osterman v. Central Nebraska Public Power and Irrigation District*, 131 Neb. 356, 268 N.W. 334 (1936)

6. *Nebraska v. Iowa*, 406 U.S. 117 (1972)

cord in concave curves and greater in convex curves. The method of computation is quite simple. If a surveyor needs help with the mathematical method they should contact the State Surveyor's Office directly for assistance.

For the Platte and other rivers which are not artificially stabilized channels. As stated before these rivers which run in sand or soft easily displaced material have a tendency to wander within the consistent confines of a permanent bed. The best and most equitable solution to division of the bed of these rivers is to define the extents of their permanent channel or bed and then establish the geographical centerline of this bed as the division between riparian owners on opposite sides of the river.

The first step of this process is to traverse the extent of the bed of the river. This bed is defined in the field by the absence of permanent vegetation. Vegetation is often found in the bed of the river but it will be willows, swamp grasses and annual or short term plants. Outside of this bed the surveyor will normally find more permanent vegetation such as larger cottonwood trees, native grasses and other native trees. This bank is always delineated by a change in elevation from the bed up to the bank where the permanent vegetation is able to grow. The surveyor should carefully inspect the area, locate the high bank of the bed of the stream and then use accurate and careful survey methods to traverse this bank, hereinafter called the present bank, well beyond the area in question on both sides of the river. Upon completion of these traverses the surveyor must compute the centerline on which all points are equal distance from each bank. The line developed as the geographic centerline of the present channel, hereinafter called the geographic centerline, will be the division line between riparian owners on opposite sides of the river.

The surveyor should use extreme caution in describing this line. As stated above and in *City of Fairbury v. Fairbury Mill & Elevator Co.*<sup>7</sup>, *Southern Neb. Power Co. v. Taylor*<sup>8</sup> and *Crawford Co. v. Hathaway*<sup>9</sup> the right to use of the water for normal purposes is inseparably connected to the land and cannot be lost except by grant, prescription or condemnation. Should the geographic centerline isolate any riparian owner from their access to the water during periods of reduced flow the riparian owners claim cannot be bounded by this line but will continue toward the flowing water until access and use has been restored. The line constructed by the surveyor as the geographic centerline is a line of convenience which equitably divides the normal bed of the stream between the riparian owners at normal flows.

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7. *City of Fairbury v. Fairbury mill & Elevator Co.*, 123 Neb. 588, 243 N.W. 774(1932)

8. *Southern Neb. Power Co. v. Taylor*, 109 Neb. 683, 192 N.W. 317(1923)

9. *Crawford Co. v. Hathaway*, 67 Neb. 325, 93 N.W. 781(1903)

### SECTION 3

#### DIVISION BETWEEN COINCIDENT RIPARIAN OWNERS

The line between adjacent riparian owners on the same side of the river must be ascertained by determination of the ownership of the bank of the present river.

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#### PROPORTIONAL METHOD

In *Conkey v. Knudsen*<sup>10</sup> the Court approved the following language:

"The rule is 1. To measure the whole extent of the ancient bank or line of the river and compute how many rods, yards or feet each riparian proprietor owned on the river line. 2. The next step is, supposing the former line, for instance, to amount to 200 rods, to divide the newly formed bank or river line into 200 equal parts and appropriate to each proprietor as many portions of this new river line, as he owned rods on the old. Then to complete the division, lines are to be drawn from the points at which the proprietors respectively bounded on the old, to the points thus determined as the points of division on the newly formed shore. The new lines thus formed it is obvious, will be either parallel, or divergent, or convergent, according as the new shore line of the river equal, or exceeds or falls short of the old."

Having completed a traverse of the ancient bank and present bank as stated above the surveyor can use this information to calculate the proportional present bank to be allocated to each riparian owner. The surveyor simply locates the point where the two traverses cross both above and below the property in question then allocates each riparian owner a proportional share of the present bank which is consistent with their holdings on the ancient bank.

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#### RIGHT ANGLE METHOD

If the traverse of the ancient bank and the traverse of the present bank do not intersect either upstream, downstream or both the surveyor may elect to continue these traverses until the two points of intersection are located. In some cases particularly on the Platte River the surveyor may encounter areas where, due to reliction, the present bank does not intersect the ancient bank for many miles. It is not reasonable to expect the surveyor to traverse many miles of river in order to determine the accretions to a single riparian claim and when this method is applied to a long section of river with numerous riparian owners it is likely an inequity will occur.

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10. *Conkey v. Knudsen*, 143 Neb. 5, 8 N.W.2d 538(1942)

When numerous claims are placed along a single proportional bank the surveyor will often find that the riparian owners share of the new bank will occur far upstream or downstream from the patented lands. This would give results which are not consistent with the Common Law doctrine that the riparian owners are entitled to alluvium which deposits on their shores. It is reasonable to assume that the method of apportionment should result in the original tract having access to the river *in front of* it. The most consistently used method of apportioning accretion when the proportional bank method fails is give each tract the accreted area which lies directly in front of it, with respect to the river. In this method the line between adjacent riparian owners is projected from the point of intersection of the patented claim and the ancient bank to the present bank of the river on a course which is normal to the geographic centerline of the river.

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#### COMBINATION METHOD

It is possible to use a combination of the proportional bank line method and right angle method to determine allotment of the bank. In this method the right angle method is used to project the lines along straight sections of the river and the intermediate portions along the curves and divided by the proportional bank line method. The combination of the two methods should only be used in extreme cases where neither of the other two methods gives a reasonable or equitable solution. The difficulty with this combination is the selection of the straight portions of the river would be made by the surveyor. This selection tends to be subjective and might be entirely different if done by another equally competent professional. Two surveyors using the combination of the two methods would probably arrive at two quite different solutions on the same tract. For this reason the combination of the two methods is not recommended unless both of the methods independently fail to give equitable solutions.

Regardless of the method used to apportion the frontage on the present bank the riparian owner will have title to the bed of the stream which lies directly in front of it, with respect to the river. If the proportional or combination method is used there will probably be deflection at present bank. After the present bank is apportioned the claim can be extended to include the bed of the stream by extending lines at right angles to the geographic centerline of the river. See Section 2 for a discussion of the extents of this claim.

From the court decisions it is clear that the proportional method is preferred where it gives equitable and reasonable results. When this method fails to place the accretions in front of the patented land or when it is impossible to use then the right angle method should be used. Only if all other methods fail to give reasonable and equitable results should the combination method be used.

#### SECTION 4

### PREVIOUSLY SURVEYED ACCRETIONS

When the surveyor is requested to survey riparian property on which earlier riparian or accretion survey has been executed a slightly different problem exists. The current survey must not change the accretions previously apportioned but must add any new accretions to those delineated by the early survey. In this case the ancient bank will be the line of deepest penetration of the bank into the riparian property shown in the early survey counting from the date of said survey. In this case an angle will normally occur on the line between accretions of adjacent riparian owners on the same side of the river. In many cases this line will be from the patented claim along the line of division determined by the early surveyor until the point of deepest penetration since the early survey is reached then it will turn along a new bearing determined by the present survey to the current high bank. This may occur as many times as new surveys are performed on the riparian property.

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#### SECTION 5

### TAX ASSESSMENT

Nebraska County Surveyors are often required to establish riparian claims for the purpose of tax assessment. Neb.Rev.Stat. § 77-1306.01 states in part:

"... it shall be the duty of the county surveyor prior to June 1, 1960, and at least once within each five-year period thereafter either to cause to be surveyed any lands believed to have been altered in such manner or to certify in writing that it is his opinion that no alteration of ownership of any land in the county from that shown by the then current tax rolls has occurred due to the action of any river, stream or other body of water along or bordering state lines .... In all counties where land ownership may from time to time be altered due to the activity of any river, stream, or other body of water not along or bordering state lines, whether by accretion or avulsion, it shall be the duty of the county surveyor to cause to be surveyed any lands believed to have been altered when directed by the county board of equalization or when requested by the tax commissioner ...."

In addition it is the normal practice of counties to require cadastral maps as required in Neb.Rev.Stat. § 77-1301.04.

When the county surveyor is required to survey accretion property as required in Neb.Rev.Stat. § 77-1306.01 it should be done in accordance with the procedures outlined above. When the county surveyor is required to prepare cadastral maps which apportion accretion property from information contained on aerial photographs without accurate survey the surveyor should use good drafting techniques to approximate the methods given above. In the case of the Platte River or other braided streams which have substantially reduced flows it is recommended that the proportional bank line method be abandoned in favor of the right angle method. The surveyor should first determine if an accurate survey of the accretions exists. If no such survey exists then the surveyor might use the following steps to apportion the accretion:

1. Accurately plot the government corners, lines and meanders on the photograph.
2. Determine if the river has penetrated into patented land subsequent to the original survey. If such penetration has occurred plot the bank line of the deepest penetration as accurately as possible on the photograph. This line, if it exists or alternately the original government meanders will mark the beginning of the accretion.
3. Use the photograph to draw cords which mark the current high banks of the river on both sides. It may be necessary to reconnoiter the area to determine where the high banks occur on the photograph.
4. Use good mathematical and drafting procedure to plot the geographic centerline of the current high banks.
5. Construct a line from the beginning of the accretion to the current high bank at right angles to the geographic centerline.

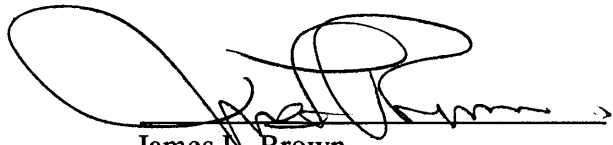
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## SECTION 6 GENERAL

Any accretions apportioned or surveyed by the surveyor shall be referred to as accretion to the patented land upon which it was formed. The county surveyor or any other official does not have the authority to create any new sections where none existed or to replace any sections which have been entirely eroded away after the original survey. Any county surveyor is expressly prohibited from creating such sections or extensions of the rectangular system for any reason.

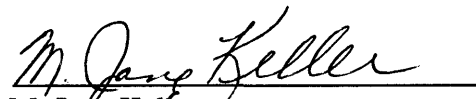


A publication titled "*Mathematical Computations of Accretion for the Great State of Nebraska*" by James L. Brown, Nebraska State Surveyor, February 11, 1989 gives a general discussion of the procedure for accretion surveys as well as the mathematical methods which might be used to comply with this instruction. The publication is available without charge from the State Surveyor's Office. A careful reading and understanding of this publication is recommended before proceeding with an accretion survey.

  
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Issuance Approved:

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